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First Named Inventor	Anthony J. Grzesiak et al.
Art Unit	3683
Examiner Name	Melody M. Burch
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ENCLOSURES *(Check all that apply)*

- ☐ Fee Transmittal Form
- ☐ Fee Attached
- ☐ Amendment/Reply
- ☐ After Final
- ☐ Affidavits/declaration(s)
- ☐ Extension of Time Request
- ☐ Express Abandonment Request
- ☐ Information Disclosure Statement
- ☐ Certified Copy of Priority Document(s)
- ☐ Response to Missing Parts/ Incomplete Application
- ☐ Response to Missing Parts under 37 CFR 1.52 or 1.53
- ☐ Drawing(s)
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- ☐ Petition
- ☐ Petition to Convert to a Provisional Application
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- ☐ After Allowance communication to Group
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- ☑ Appeal Communication to Group **(Appeal Notice, Brief, Reply Brief)**
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- ☐ Status Letter
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Remarks

Applicant believes no fee to be due for the attached filing, however, should additional fees be due in order to prevent the abandonment of this application, please consider this as authorization to charge Deposit Account No. 501612 (Warn, Burgess & Hoffmann, P.C.) for any such fees due. A duplicate copy of this document is enclosed for this purpose.

SIGNATURE OF APPLICANT, ATTORNEY, OR AGENT

Firm or Individual name	Warn, Burgess & Hoffmann, P.C. Philip R. Warn - Reg No. 32775
Signature	
Date	May 3, 2004

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AF/3683

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE
BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES

In re application of:	Anthony J. Grzesiak et al.
Serial No.:	10/016,472
Filing Date:	December 10, 2001
Group Art Unit:	3683
Examiner:	Melody M. Burch
Title:	BRAKE BANDS FOR AN AUTOMATIC TRANSMISSION AND METHOD FOR CONTROLLING A GEAR SHIFT IN AUTOMATIC TRANSMISSION AND FEEDBACK LOOP CONTROL SYSTEM
Attorney Docket:	DKT 00065A (BWI-00056)

Certificate of Mailing

I hereby certify that this correspondence is being deposited with the United States Postal Service, as first class mail, in an envelope addressed to: Mail Stop Appeal Brief - Patents, Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450, on May 3, 2004 By: _____.

AMENDED APPEAL BRIEF

Mail Stop Appeal Brief - Patents
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Dear Sir:

Pursuant to 37 CFR §1.192, this is an Amended Appeal Brief in response to the Notice of Non-Compliance with 37 C.F.R. 1.192(c) mailed April 2, 2004. The Amended Appeal Brief is submitted in triplicate.

The Commissioner is hereby authorized to charge any fees that may be required for filing a brief in support of an appeal in accordance with 37 CFR §1.17(c), or credit any overpayment to Applicant's Deposit Account No. 501612.

If for some reason applicant has not requested a sufficient extension of time and/or has not paid a sufficient fee necessary to prevent abandonment of this application, please consider this as a Request for an Extension for the required time period and/or authorization to charge Applicants' Deposit Account No. 501612 for any extension of time fee which may be due.

Table of Contents

Table of Authorities

Real Party in Interest

The real party in interest for this appeal is BorgWarner, Inc. of Troy, Michigan, the assignee of the application.

Related Appeals and Interferences

There are no related appeals or interferences.

Status of the Claims

Claims 1, 4-9, 11-15 and 18-23 are pending in this application. Claims 2, 3, 10, 16, and 17 have been previously canceled, without prejudice.

Claims 1, 7 and 8 are rejected under 35 USC §102(b) as being anticipated by U.S. Patent No. 5,752,588 to Reichert et al. Claims 1, 7 and 8 are also rejected under 35 USC §102(b) as being anticipated by JP-11264460 (using U.S. Patent No. 6,102,825 to Hisano et al. as an English equivalent). Claims 4, 5, 9-11, 13, 18-21, and 23 are rejected under 35 USC §103(a) as being unpatentable over Reichert et al. in view of U.S. Patent No. 5,003,842 to Hatta et al. Claims 4, 5, 13-15 and 18-23 are rejected under 35 USC §103(a) as being unpatentable over JP-11264460 to Hisano et al. in view of U.S. Patent No. 5,003,842 to Hatta et al. Claim 6 is rejected under 35 USC §103(a) as being unpatentable over Reichert et al. in view of U.S. Patent No. 4,070,981 to Guinn et al. Claim 6 is rejected under 35 USC §103(a) as being unpatentable over JP-11264460 in view of U.S. Patent No. 4,070,981 to Guinn et al. Claim 12 is rejected under 35 USC §103(a) as being unpatentable over Reichert et al. in view of U.S. Patent No. 5,003,842 to Hatta et al. and further in view of Guinn et al.

In response to the amendment mailed April 28, 2003, claims 1, 4-9, 11-15 and 18-23 were finally rejected in the Office Action mailed July 18, 2003. A response to the final Office Action was mailed on September 18, 2003 and was considered and entered by the Examiner for purposes of appeal. An Advisory Action was mailed on October 14, 2003. This appeal is taken as to claims 1, 4-9, 11-15 and 18-23, as presently pending.

Status of Amendments

A response to the final Office Action was mailed on September 18, 2003 and was considered and entered by the Examiner for purposes of appeal. No further amendments have been submitted.

Summary of the Invention

A brake band mechanism (Page 4, line 19-Page 9, line 4 and Ref. 10 in Fig. 1 and Ref. 130 in Fig. 4) for an automatic transmission having a brake drum (Page 4, lines 5-9 and Ref. 12 in Fig. 1), said mechanism comprising a brake band (Page 4, line 5-Page 10, line 16 and Ref. 14 in Fig. 1) encircling the brake drum, said brake band including opposing ends (Page 5, line 6-Page 6, line 18 and Refs. 16 and 18 in Fig. 1), said brake band operable to be compressed and expanded around the brake drum (Page 5, line 7-Page 9, line 4) a two-stage hydraulic servo (Page 5, line 18-Page 10, line 16 and Ref. 28 in Figs. 1 and 3), and a linkage (Page 5, line 11-Page 7, line 2 and Refs. 22, 24, 26, 30, 32 and 34 in Fig. 1 and Refs. 102, 116, 118, 134, 138 and 140 in Fig.4) coupled to said servo and said brake band (Page 5, line 6-Page 9, line 4), said servo activating said linkage to provide positive compression and expansion to said brake band for applying friction to the brake drum to control the speed of rotation of said

brake drum (Page 5, line 18-Page 9, line 4), wherein said servo provides a rapid activation of said linkage during a first stage to rapidly expand said brake band, and a controlled compression and expansion of said brake band during a second stage (Page 5, line 18-Page 9, line 4), is claimed.

A brake band mechanism (Page 4, line 19-Page 9, line 4 and Ref. 10 in Fig. 1 and Ref. 130 in Fig. 4) for an automatic transmission having a brake drum (Page 4, lines 5-9 and Ref. 12 in Fig. 1), said mechanism comprising a brake band (Page 4, line 5-Page 10, line 16 and Ref. 14 in Fig. 1) encircling the brake drum, said brake band including opposing ends (Page 5, line 6-Page 6, line 18 and Refs. 16 and 18 in Fig. 1), said brake band operable to be compressed and expanded around the brake drum (Page 5, line 7-Page 9, line 4), a linkage coupled to said brake band (Page 5, line 11-Page 7, line 2 and Refs. 22, 24, 26, 30, 32 and 34 in Fig. 1 and Refs. 102, 116, 118, 134, 138 and 140 in Fig.4), a two-stage hydraulic servo (Page 5, line 18-Page 9, line 4 and Ref. 28 in Figs. 1 and 3), said linkage coupled to said servo (Page 5, line 6-Page 9, line 4), said servo including a servo rod position sensor (Page 8, lines 4-15 and Ref. 98 in Fig. 4) for determining a position of a stroke rod of said servo, said servo providing a rapid activation of the linkage during a first stage to rapidly expand said brake band, and a controlled compression and expansion of said brake band during a second stage (Page 5, line 18-Page 9, line 4), and a clip structure (Page 5, line 10-Page 7, line 2 and Ref. 21 and 36 in Fig. 1 and Ref. 132 and 136 in Fig. 4), said clip structure being mounted to an end of said brake band and being coupled to said linkage (Page 5, line 10-Page 7, line 2 and Ref. 21 and 36 in Fig. 1 and Ref. 132 and 136 in Fig. 4), said servo activating said linkage to provide positive compression and expansion to said brake band for applying friction to the brake drum to control the speed of rotation of said

brake drum (Page 5, line 18-Page 9, line 4), wherein said servo includes a first piston and a second piston (Page 7, line 3-Page 9, line 4 and Ref. 62 and 64 in Fig. 4), said first piston being smaller than said second piston (Page 7, line 3-Page 9, line 4), said first piston being operable to provide rapid movement of said brake band and said second piston being operable to provide fine adjustments of said brake band (Page 7, line 3-Page 9, line 4), is claimed.

A method of controlling a shift of an automatic transmission (Page 9, line 5-Page 10, line 22 and Fig. 7) comprising providing a brake band (Page 4, line 5-Page 10, line 16 and Ref. 14 in Fig. 1) for engaging a brake drum (Page 4, lines 5-9 and Ref. 12 in Fig. 1) of an automatic transmission, said brake band being positively controlled for both apply and release pressure around said brake drum (Page 5, line 7-Page 10, line 22), applying a first fast active compression force to said brake band to a predetermined position (Page 5, line 18-Page 10, line 22), and providing a closed loop control of pressure on said brake band in both positive apply and release directions for controlling shift parameters of the transmission based on a predetermined input (Page 9, line 5-Page 10, line 22), wherein a two-stage servo is used for controlling said brake band (Page 5, line 18-Page 10, line 22 and Ref. 28 in Figs. 1 and 3), wherein said servo has a first stage for rapidly applying band pressure, and a second stage for providing positive finite control of both apply and release pressures on said brake band during the shift (Page 5, line 18-Page 10, line 22), is claimed.

Summary of the References Cited

It is the Applicants' understanding that U.S. Patent No. 5,752,588 to Reichert et al. appears to disclose a hydraulic servo for friction brakes of an automatic transmission

that comprises a cylinder (2) with a main piston (3) arranged therein, a smaller cylinder (8) to receive a smaller compensation piston (9), the smaller cylinder communicating with the pressure chamber (5) of the main piston (3) through an orifice (18) controlled by a ball valve (20). A stepped bore (22) connects the pressure chamber (5) to the compensation chamber (17). A stepped piston (23), located in the bore, forms a discharge control valve (24), which controls the discharge of pressure medium from the compensation chamber (17).

It is the Applicants' understanding that JP-11264460 to Hisano et al. (using U.S. Patent No. 6,102,825 as an English language equivalent) appears to disclose a rotational direction of a rotational element at a high speed gear stage is different from a operational direction of a reaction torque at a low speed gear stage. The rotation by the reaction torque at the low speed gear stage is stopped with a self-energizing operation of a band brake operated by a hydraulic servo. A waiting pressure, which is lower for a predetermined amount than a engagement pressure at the self-energizing operation, and with which a basis of a racing amount occurs after a synchronizing point, is applied to the hydraulic servo until the synchronization is determined. The waiting pressure increases to the engagement pressure after determining the synchronization so that the rotational element is stopped gradually as preventing a long shift time.

It is the Applicants' understanding that U.S. Patent No. 5,003,842 to Hatta et al. appears to disclose, in an automatic transmission gear system which selectively actuates a plurality of frictional elements by oil pressure such as clutches and brakes that are provided in the transmission gear system in order to obtain different gear ratios, one frictional element is disengaged concurrently with engaging of another frictional element for switching the gear ratio (speed change). At that time, it is important to

adjust the timing for actuating the frictional elements depending on the conditions of the engine and the vehicle itself. The present invention relates to a control device for an automatic transmission gear system that assures smooth gear shifting at all times by adequately controlling the overlap of the torque capacities of the frictional elements.

It is the Applicants' understanding that U.S. Patent 4,070,981 to Guinn et al. appears to disclose a mooring system for maintaining a ship shape drilling vessel within alignment limits and for warping it into the sea while drilling a well from the vessel in the sub-surface ground below it. The mooring system absorbs all of the forces on the vessel, such as wind, current, wave, swell, roll, pitch, heave, surge and sway. These forces are measured by sensing load on a motor, electric, hydraulic, and the like, driving the anchor chain wildcat while hauling it in, by sensing load on the brake bands for the windlass wildcats, and by sensing load on the chain stopper, which sensed loads are transmitted to a display device which provides sufficient information to maintain the drilling vessel within the alignment limits and to warp it into the sea to minimize forces and motions of the vessel and to avoid beam sea forces. Preferably, a chain counter is provided on the power wildcat that counts the links, and hence the distance, the anchor chain is payed out or hauled in, which is transmitted to the display device. The anchor chains extend from each side both fore and aft of the vessel and each anchor chain has an electric motor driven wildcat, and extends through a chain stopper and fairlead. Vessel alignment is displayed on a cathode ray tube using an acoustic position resonance system.

Issues

Are Applicants' claims to a brake band mechanism for an automatic transmission having a brake drum, as recited in claims 1, 7 and 8, anticipated by U.S. Patent No. 5,752,588 to Reichert et al.?

Are Applicants' claims to a brake band mechanism for an automatic transmission having a brake drum, as recited in claims 1, 7 and 8, anticipated by JP-11264460 to Hisano et al.?

Are Applicants' claims to a brake band mechanism for an automatic transmission having a brake drum, and a method of controlling a shift of an automatic transmission, as recited in claims 4, 5, 9-11, 13, 18-21 and 23, unpatentable over U.S. Patent No. 5,752,588 to Reichert et al. in view of U.S. Patent No. 5,003,842 to Hatta et al.?

Are Applicants' claims to a brake band mechanism for an automatic transmission having a brake drum, and a method of controlling a shift of an automatic transmission, as recited in claims 4, 5, and 13-15, and 18-23, unpatentable over JP-11264460 to Hisano et al. in view of U.S. Patent No. 5,003,842 to Hatta et al.?

Are Applicants' claims to a brake band mechanism for an automatic transmission having a brake drum, as recited in claim 6, unpatentable over U.S. Patent No. 5,752,588 to Reichert et al. in view of U.S. Patent No. 4,070,981 to Guinn et al.?

Are Applicants' claims to a brake band mechanism for an automatic transmission having a brake drum, as recited in claim 6, unpatentable over JP-11264460 in view of U.S. Patent No. 4,070,981 to Guinn et al.?

Are Applicants' claims to a brake band mechanism for an automatic transmission having a brake drum, as recited in claim 12, unpatentable over U.S. Patent No. 5,003,842 to Hatta et al. as applied to claim 9, and further in view of Guinn et al.?

Grouping of the Claims

For purposes of this appeal, the claims do not stand and fall together.

Argument Regarding the 35 USC §102(b) Rejection of Claims 1, 7 and 8

Claims 1, 7 and 8 stand rejected under 35 U.S.C. §102(b), as being anticipated by U.S. Patent No. 5,752,588 to Reichert et al.

The Applicants respectfully traverse the 35 U.S.C. §102(b) rejection of claims 1, 7 and 8.

The law is clear that anticipation requires that a single prior art reference disclose each and every limitation of the claim sought to be rejected. 35 U.S.C. §102(b).

The law is also clear that a claim in dependent form shall be construed to incorporate all the limitations of the claim to which it refers. 35 U.S.C. §112, fourth paragraph.

With respect to the recitation of claim 1, as amended, the Applicants submit that Reichert et al. fails in teaching the claimed structure.

While Reichert et al. may arguably disclose a two-stage hydraulic circuit, there is no teaching that the "servo provides a rapid activation of [the] linkage during a first stage to rapidly expand [the] brake band, and a controlled compression and expansion of [the] brake band during a second stage."

With respect to the Examiner's assertion that "it is evident that Reichert et al. describe the invention to the same extent as Applicant," the Applicants respectfully disagree.

There is no teaching whatsoever in Reichert et al. regarding rapid activation of a linkage during a first stage to rapidly expand the brake band, and a controlled

compression and expansion of the brake band during a second stage. Reichert et al. is only concerned with hydraulic fluid conservation, not rapid and/or controlled linkage actuation, as presently claimed.

With respect to the Examiner's assertions that "the use of a minimized amount of hydraulic fluid to achieve actuation suggests that actuation occurs faster since it takes less time to wait for the accumulation of a small or minimized volume of fluid" and "since the smaller apply piston associated with the first stage is the first to cause brake actuation, the first stage may be considered the quicker (or comparatively rapid) stage just as the first runner to reach a finish line of a race is considered to be the quicker runner," the Applicants respectfully disagree.

While Reichert et al. may arguably disclose a two-stage hydraulic circuit, there is no teaching that the servo provides a rapid activation of the linkage during a first stage to rapidly expand the brake band, and a controlled compression and expansion of the brake band during a second stage.

Conversely, Reichert et al. discloses, at column 1, lines 33-39, that:

> It is an object of the invention to provide an hydraulic servo with travel compensation, for friction brakes for shifting an automatic transmission for motor vehicles, in order, at the time of shift, **to minimize the volume of hydraulic fluid required to apply a friction brake** to avoid an undesired pressure drop due to the volume of fluid which has to be made available. (Emphasis added).

Thus, Reichert et al. appears to disclose that the supposed first stage actuation of the hydraulic servo is accomplished slowly, due to the conservation of hydraulic fluid delivered to the pressure chamber of the supposed main piston of the servo. More specifically, Reichert et al. is concerned primarily with conserving hydraulic fluid in the event of a system leak, e.g., through the use of a compensation pressure chamber and

cooperating piston, than with rapid first stage piston actuation of the hydraulic servo, as presently claimed.

The Applicants submit that Reichert et al. does not anticipate claim 1 for at least the reasons set froth above. Furthermore, claims 7 and 8, which depend from and further define claim 1, are likewise not anticipated by Reichert et al.

Accordingly, the Applicants contend that the 35 U.S.C. §102(b) rejection of claims 1, 7 and 8 has been overcome.

Argument Regarding the 35 USC §102(b) Rejection of Claims 1, 7 and 8

Claims 1, 7 and 8 stand rejected under 35 U.S.C. §102(b), as being anticipated by JP-11264460 (using U.S. Patent No. 6,102,825 to Hisano et al. as an English equivalent).

The Applicants respectfully traverse the 35 U.S.C. §102(b) rejection of claims 1, 7 and 8.

Hisano et al. teaches no such structure as recited in claim 1, as amended.

Specifically, while Hisano et al. may arguably disclose a two-stage hydraulic circuit, there is no teaching that the "servo provides a rapid activation of [the] linkage during a first stage to rapidly expand [the] brake band, and a controlled compression and expansion of [the] brake band during a second stage."

With respect to the Examiner's assertion that "since the Hisano et al. reference shows a small apply piston 43 arranged closest to the linkage that promotes the initial brake application movement to the linkage and shows a larger apply piston 44 for more finite adjustments of the brake band pressure to the same extent as Applicant's, Examiner maintains the rejections," the Applicants respectfully disagree.

While Hisano et al. may arguably disclose a two-stage hydraulic circuit, there is no teaching or suggestion that the "servo provides a rapid activation of [the] linkage during a first stage to rapidly expand [the] brake band, and a controlled compression and expansion of [the] brake band during a second stage." For example, Hisano et al. disclose at, column 3, lines 3-23:

> According to the invention, the rotation of the rotational element reduces to synchronize with the rotation of the rotational element at the low speed gear stage. That is, the rotation of the rotational element reduces to stop. In this case, the de-energizing operation occurs at the band brake. Therefore, **the rotational element is not stopped from rotating by the band brake, because the engagement force occurred by the application of the aforementioned hydraulic pressure is small**. After that, when the rotational element is stopped from rotating and then the reverse rotation of the rotational element is started, the self-energizing operation occurs. Therefore, the engagement force of the band brake steeply increases to stop the rotational element from rotating.
>
> In this case, the hydraulic pressure applied to the hydraulic servo of the band brake is the waiting pressure, which is lower for the predetermined amount than the hydraulic pressure to maintain the stop of the rotation of the rotational element. Therefore, **the rotational element is not steeply stopped, that is, the rotation of the rotational element changes gradually**. (Emphasis added).

Thus, Hisano et al. appears to disclose that the supposed first stage actuation of the hydraulic servo is accomplished slowly or weakly, due to the application of only a small amount of hydraulic pressure to the supposed main piston of the servo.

The Applicants submit that Hisano et al. does not anticipate claim 1 for at least the reasons set froth above. Furthermore, claims 7 and 8, which depend from and further define claim 1, are likewise not anticipated by Hisano et al.

Accordingly, the Applicants contend that the 35 U.S.C. §102(b) rejection of 1, 7 and 8 has been overcome.

Argument Regarding the 35 USC §103(a) Rejection of Claims 4, 5, 9-11, 13, 18-21 and 23

Claims 4, 5, 9-11, 13, 18-21, and 23 stand rejected under 35 U.S.C. §103(a), as being unpatentable over Reichert et al. in view of U.S. Patent No. 5,003,842 to Hatta et al.

The Applicant respectfully traverses the 35 U.S.C. §103(a) rejection of claims 4, 5, 9-11, 13, 16-21, and 23. The Examiner should note that claim 10 was canceled, without prejudice, in a previous response.

The standard for obviousness is that there must be some suggestion, either in the reference or in the relevant art, of how to modify what is disclosed to arrive at the claimed invention. In addition, "[s]omething in the prior art as a whole must suggest the desirability and, thus, the obviousness, of making" the modification to the art suggested by the Examiner. *Uniroyal, Inc. v. Rudkin-Wiley Corp.*, 837 F.2d 1044, 1051, 5 U.S.P.Q.2d (BNA) 1434, 1438 (Fed. Cir.), cert. denied, 488 U.S. 825 (1988). Although the Examiner may suggest the teachings of a primary reference could be modified to arrive at the claimed subject matter, the modification is not obvious unless the prior art also suggests the desirability of such modification. *In re Laskowski*, 871 F.2d 115, 117, 10 U.S.P.Q.2d (BNA) 1397, 1398 (Fed. Cir.1989). There must be a teaching in the prior art for the proposed combination or modification to be proper. *In re Newell*, 891 F.2d 899, 13 U.S.P.Q.2d (BNA) 1248 (Fed. Cir. 1989). If the prior art fails to provide this necessary teaching, suggestion, or incentive supporting the Examiner's suggested modification, the rejection based upon this suggested modification is error and must be reversed. *In re Bond*, 910 F.2d 831, 15 U.S.P.Q.2d (BNA) 1566 (Fed. Cir. 1990).

The Examiner apparently cited Hatta et al. in order to cure the aforementioned deficiencies in the disclosure of Reichert et al. Although Hatta et al. may arguably suggest a piston position sensor, the Examiner is correct that Hatta et al. fail to teach or suggest a servo rod position sensor. However, Hatta et al. adds nothing to the disclosure of Reichert et al. in terms of disclosing the structure and function of the two-stage hydraulic servo, wherein the servo provides a rapid activation of the linkage during a first stage to rapidly expand the brake band, and a controlled compression and expansion of the brake band during a second stage, as presently recited in claim 1, as amended.

Because claim 1 is allowable over Reichert et al. and/or Hatta et al., either alone or in combination therewith, for at least the reasons stated above, claims 4 and 5, which depend from and further define claim 1, are likewise allowable.

Accordingly, the 35 USC §103(a) rejection of claims 4 and 5 has been overcome.

Neither Reichert et al. and/or Hatta et al., either alone or in combination therewith, teach or suggest such a structure as recited in claim 9, as amended.

Specifically, while Reichert et al. may arguably disclose a two-stage hydraulic circuit, there is no teaching of a "servo providing a rapid activation of the linkage during a first stage to rapidly expand said brake band, and a controlled compression and expansion of said brake band during a second stage; and ... [the] servo activating said linkage to provide positive compression and expansion to said brake band for applying friction to the brake drum to control the brake drum's speed of rotation; wherein said servo includes a first piston and a second piston, said first piston being smaller than said second piston, said first piston being operable to provide rapid movement of said

brake band and said second piston being operable to provide fine adjustments of said brake band."

As previously noted, although Hatta et al. may arguably suggest a piston position sensor, the Examiner is correct that Hatta et al. fail to teach or suggest a servo rod position sensor. However, Hatta et al. does not cure the aforementioned deficiencies in the disclosure of Reichert et al.

Accordingly, the 35 U.S.C. §103(a) rejection of claim 9 has been overcome.

Because claim 9 is allowable over Reichert et al. and/or Hatta et al., either alone or in combination therewith, for at least the reasons stated above, claim 11, which depends from and further defines claim 9, is likewise allowable.

Neither Reichert et al. and/or Hatta et al., either alone or in combination therewith, teach or suggest such methodology as recited in claim 13, as amended.

Specifically, while Reichert et al. may arguably disclose a two-stage hydraulic circuit, there is no teaching of a method for "applying a first fast active compression force to said brake band to a predetermined position ... wherein a two-stage servo is used for controlling said brake band; wherein said servo has a first stage for rapidly applying band pressure, and a second stage for providing positive finite control of both apply and release pressures on said brake band during the shift."

Again, as previously noted, although Hatta et al. may arguably suggest a piston position sensor, the Examiner is correct that Hatta et al. fail to teach or suggest a servo rod position sensor. However, Hatta et al. does not cure the aforementioned deficiencies in the disclosure of Reichert et al.

Accordingly, the 35 U.S.C. §103(a) rejection of claim 13 has been overcome.

Because claim 13 is allowable over Reichert et al. and/or Hatta et al., either

alone or in combination therewith, for at least the reasons stated above, claims 18-21 and 23, which depend from and further define claim 13, are likewise allowable.

Argument Regarding the 35 USC §103(a) Rejection of Claims 4, 5, 13-15 and 18-23

Claims 4, 5, and 13-15, and 18-23 are rejected under 35 USC §103(a) as being unpatentable over JP-11264460 to Hisano et al. in view of U.S. Patent No. 5,003,842 to Hatta et al.

The Applicants respectfully traverse the 35 U.S.C. §103(a) rejection of claims 4, 5, 13-15, and 18-23.

The Examiner apparently cited Hatta et al. in order to cure the aforementioned deficiencies in the disclosure of Hisano et al. Again, as previously noted, although Hatta et al. may arguably suggest a piston position sensor, the Examiner is correct that Hatta et al. fail to teach or suggest a servo rod position sensor. However, Hatta et al. adds nothing to the disclosure of Hisano et al. in terms of disclosing the structure and function of the two stage hydraulic servo of the invention, as presently recited in claim 1, as amended.

Because claim 1 is allowable over Hisano et al. and/or Hatta et al., either alone or in combination therewith, for at least the reasons stated above, claims 4 and 5, which depend from and further define claim 1, are likewise allowable.

Accordingly, the 35 USC §103(a) rejection of claims 4 and 5 has been overcome.

Furthermore, neither Hisano et al. and/or Hatta et al., either alone or in combination therewith, teach or suggest such methodology as claimed in claim 13.

Specifically, while Hisano et al. may arguably disclose a two-stage hydraulic circuit, there is no teaching of a method for "applying a first fast active compression

force to said brake band to a predetermined position ... wherein a two-stage servo is used for controlling said brake band; wherein said servo has a first stage for rapidly applying band pressure, and a second stage for providing positive finite control of both apply and release pressures on said brake band during the shift."

Again, as previously noted, although Hatta et al. may arguably suggest a piston position sensor, the Examiner is correct that Hatta et al. fail to teach or suggest a servo rod position sensor. However, Hatta et al. does not cure the aforementioned deficiencies in the disclosure of Hisano et al.

Accordingly, the 35 USC §103(a) rejection of claim 13 has been overcome.

Because claim 13 is allowable over Hisano et al. and/or Hatta et al., either alone or in combination therewith, for at least the reasons stated above, claims 14, 15 and 18-23, which depend from and further define claim 13, are likewise allowable.

Argument Regarding the 35 USC §103(a) Rejection of Claim 6

Claim 6 is rejected under 35 USC §103(a) as being unpatentable over Reichert et al. in view of U.S. Patent No. 4,070,981 to Guinn et al.

The Applicants respectfully traverse the 35 USC §103(a) rejection of claim 6.

The Examiner apparently cited Guinn et al. in order to cure the aforementioned deficiencies in the disclosure of Reichert et al. Although Guinn et al. may arguably disclose a strain sensor, it adds nothing to the disclosure of Reichert et al. in terms of disclosing the structure and function of the two-stage hydraulic servo, wherein the servo provides a rapid activation of the linkage during a first stage to rapidly expand the brake band, and a controlled compression and expansion of the brake band during a second stage, as presently recited in claim 1, as amended.

Furthermore, Guinn et al. discloses a mooring system for floating drilling vessels and does not appear to even mention automatic transmissions. Thus, one of ordinary skill in the art would not look to Guinn et al. for guidance on constructing or operating an automatic transmission as presently claimed.

Because claim 1 is allowable over Reichert et al. for at least the reasons stated above, claim 6, which depends from and further defines claim 1, is likewise allowable.

Accordingly, the 35 USC §103(a) rejection of claim 6 has been overcome.

Argument Regarding the 35 USC §103(a) Rejection of Claim 6

Claim 6 is rejected under 35 USC §103(a) as being unpatentable over JP-11264460 in view of U.S. Patent No. 4,070,981 to Guinn et al.

The Applicants respectfully traverse the 35 USC §103(a) rejection of claim 6.

The Examiner apparently cited Guinn et al. in order to cure the aforementioned deficiencies in the disclosure of Hisano et al. Although Guinn et al. may arguably disclose a strain sensor, it adds nothing to the disclosure of Hisano et al. in terms of disclosing the structure and function of the two-stage hydraulic servo, wherein the servo provides a rapid activation of the linkage during a first stage to rapidly expand the brake band, and a controlled compression and expansion of the brake band during a second stage, as presently recited in claim 1, as amended.

Furthermore, Guinn et al. discloses a mooring system for floating drilling vessels and does not appear to even mention automatic transmissions. Thus, one of ordinary skill in the art would not look to Guinn et al. for guidance on constructing or operating an automatic transmission as presently claimed.

Because claim 1 is allowable over Hisano et al. for at least the reasons stated

above, claim 6, which depends from and further defines claim 1, is likewise allowable.

Accordingly, the 35 USC §103(a) rejection of claim 6 has been overcome.

Argument Regarding the 35 USC §103(a) Rejection of Claim 12

Claim 12 is rejected under 35 USC §103(a) as being unpatentable over Reichert et al. in view of U.S. Patent No. 5,003,842 to Hatta et al. as applied to claim 9 above, and further in view of Guinn et al.

The Applicants respectfully traverse the 35 USC §103(a) rejection of claim 12.

The Examiner apparently cited Guinn et al. in order to cure the aforementioned deficiencies in the disclosure of Reichert et al. and/or Hatta et al. Although Guinn et al. may arguably disclose a strain sensor, it adds nothing to the disclosure of Reichert et al. and/or Hatta et al. in terms of disclosing the structure and function of the two-stage hydraulic servo, wherein the servo provides a rapid activation of the linkage during a first stage to rapidly expand the brake band, and a controlled compression and expansion of the brake band during a second stage, as presently recited in claim 9, as amended.

Furthermore, Guinn et al. discloses a mooring system for floating drilling vessels and does not appear to even mention automatic transmissions. Thus, one of ordinary skill in the art would not look to Guinn et al. for guidance on constructing or operating an automatic transmission as presently claimed.

Because claim 9 is allowable over Reichert et al. and/or Hatta et al., either alone or in combination therewith, for at least the reasons stated above, claim 12, which depends from and further defines claim 9, is likewise allowable.

Accordingly, the 35 USC §103(a) rejection of claim 12 has been overcome.

Conclusion

For the reasons advanced above, appellant respectfully urges that the rejections of claims 1, 4-9, 11-15 and 18-23 under 35 USC §§102(b) and/or 103(a) are improper. Reversal of the rejections in this appeal is respectfully requested.

Respectfully submitted,

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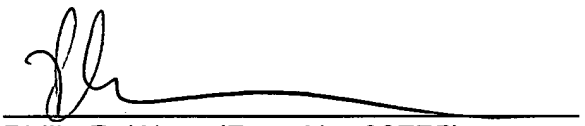

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APPENDIX

COPY OF CLAIMS INVOLVED IN THE APPEAL

1. A brake band mechanism for an automatic transmission having a brake drum, said mechanism comprising:

a brake band encircling the brake drum, said brake band including opposing ends, said brake band operable to be compressed and expanded around the brake drum;

a two-stage hydraulic servo; and

a linkage coupled to said servo and said brake band, said servo activating said linkage to provide positive compression and expansion to said brake band for applying friction to the brake drum to control the speed of rotation of said brake drum;

wherein said servo provides a rapid activation of said linkage during a first stage to rapidly expand said brake band, and a controlled compression and expansion of said brake band during a second stage.

4. The mechanism according to claim 1 further comprising a position sensor, said position sensor sensing the position of a piston of said servo.

5. The mechanism according to claim 1 further comprising at least one linkage sensor, said at least one linkage sensor sensing the position of said linkage.

6. The mechanism according to claim 1 further comprising at least one band strain sensor, said at least one band strain sensor measuring the strain on said brake band.

7. The mechanism according to claim 1 wherein said servo includes a first piston and a second piston, said first piston being smaller than said second piston, said first piston being operable to provide rapid movement of said brake band and said second piston being operable to provide fine adjustments of said brake band.

8. The mechanism according to claim 1 further comprising a clip structure, said clip structure being mounted to at least one of the opposing ends of said brake band and being coupled to said linkage.

9. A brake band mechanism for an automatic transmission having a brake drum, said mechanism comprising:

a brake band encircling the brake drum, said brake band including opposing ends, said brake band operable to be compressed and expanded around the brake drum;

a linkage coupled to said brake band;

a two-stage hydraulic servo, said linkage coupled to said servo, said servo including a servo rod position sensor for determining a position of a stroke rod of said servo, said servo providing a rapid activation of the linkage during a first stage to rapidly expand said brake band, and a controlled compression and expansion of said brake band during a second stage; and

a clip structure, said clip structure being mounted to an end of said brake band and being coupled to said linkage, said servo activating said linkage to provide positive compression and expansion to said brake band for applying friction to the brake drum to control the speed of rotation of said brake drum;

wherein said servo includes a first piston and a second piston, said first piston being smaller than said second piston, said first piston being operable to provide rapid movement of said brake band and said second piston being operable to provide fine adjustments of said brake band.

11. The mechanism according to claim 9 further comprising at least one linkage sensor, said at least one linkage sensor sensing the position of said linkage.

12. The mechanism according to claim 9 further comprising at least one band strain sensor, said at least one band strain sensor measuring the strain on said brake band.

13. A method of controlling a shift of an automatic transmission comprising:

providing a brake band for engaging a brake drum of an automatic transmission, said brake band being positively controlled for both apply and release pressure around said brake drum;

applying a first fast active compression force to said brake band to a predetermined position; and

providing a closed loop control of pressure on said brake band in both positive apply and release directions for controlling shift parameters of the transmission, based on a predetermined input;

wherein a two-stage servo is used for controlling said brake band;

wherein said servo has a first stage for rapidly applying band pressure, and a second stage for providing positive finite control of both apply and release pressures on said brake band during the shift.

14. The method of claim 13 wherein said shift parameters are selected from the group consisting of servo position, apply strut strain, servo pressure, band strain, engine RPM, transmission torque output, and combinations thereof.

15. The method of claim 13 further comprising a closed loop software control system controlling an apply solenoid.

18. The method of claim 13 wherein said method comprises controlling said shift by first ramping up the pressure at the beginning of said shift and releasing pressure toward the end of said shift.

19. The method of claim 18 wherein said brake band is locked in an applied position after the completion of said shift.

20. The method of claim 18 wherein a switch between ramping up and closed loop control is determined by inputs selected from the group consisting of servo position, apply strut strain, servo pressure, band strain, engine RPM, transmission torque output, and combinations thereof.

21. The method of claim 18 wherein both apply and release pressures are independently controlled.

22. The method of claim 21 wherein solenoids are used to independently control the apply and release hydraulic pressure.

23. The method of claim 13 wherein said first stage is a smaller volume piston than said second stage.